CHEMICAL COMPOSITION OF *TRIUMFETTA PSEUDOCANA* SPARAGUE & CRAIB, COLLECTED IN LAMDONG, VIETNAM

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(Received: April 15, 2022; Accepted: May 18, 2022)

Abstract - *Triumfetta pseudocana* is a medicinal plant with cool properties. It is used in folk medicine to treat a number of diseases. Currently, there are not many published studies on the biological activity and especially the chemical composition of this plant. In this study, we chose to study the chemical composition from leaves and stems of *Triumfetta pseudocana* collected in Dalat, Lamdong province, Vietnam in July 2017. By chromatography, four compounds were isolated, include: tiliroside (1), friedelan-3-one (2), 3β-hydroxyfriedelane (3) and triumboidin (4). Their structures were determined by spectroscopic methods (1D and 2D-NMR) and in comparison with the reported data. This is the first time the chemical composition of the species *Triumfetta pseudocana* has been investigated.

Key words - *Triumfetta pseudocana*; tiliroside; friedelan-3-one; 3β-hydroxyfriedelane; triumboidin

1. Introduction

Triumfetta psedocana (Sparague & Craib) belongs to– family Malvaceae. They are shrubs, about 1-1.5 m tall, flowering in January ÷ March, fruiting in June ÷ August. This species is widely distributed in African countries and some Asian countries such as China, Japan, the Philippines, Malaysia, Indonesia, India and Vietnam. In Vietnam, they are found in high mountains and wild hills in the Northern provinces (Lang Son, Quang Ninh, Ninh Binh...), the Central region (Thua Thien - Hue, Ninh Thuan...), Central Highlands (Kom Tum, Gia Lai), Southern region (Binh Phuoc) [1]. *Triumfetta psedocana* has a sweet taste, cool properties, has the effect of clearing heat, detoxifying, and diuretic, so it is often used to treat colds caused by heat, urination, boils and diarrhea [2].

So far, there have been no national or international publications on the chemical composition and biological activity of *Triumfetta psedocana* (Sparague & Craib). The results of research on the chemical composition of other species in the genus *Triumfetta L.* showed that triterpenoids [3], steroids, phenolics, triumfettalarein [4] and flavonoids [5] are the main groups of substances in this genus. In this paper, we report the extraction, purification and structural determination of two flavonoid and two triterpenoid framework compounds from leaf and stem samples of *Triumfetta psedocana* collected in Dalat, Lamdong province, Vietnam.

2. Material and methods

2.1. Materials and equipment

NMR spectra recorded on Bruker AM 500 FT-NMR instrument with TMS as internal standard, 500 MHz for ^{1}H and 125 MHz for ^{13}C-NMR; SiO2 Merck 63-200 μm, Sephadex LH20 (Merck), Dianion HP-20 (Merck) were used for column chromatography. Thin layer chromatography using silica gel G60 F254 and RP-18F254 pre-coated on aluminum plates.

2.2. Research subjects

Leaf and stem samples of *Triumfetta pseudocana* were collected in Dalat, Lamdong province, Vietnam, in May 2017. Scientific name (*Triumfetta psedocana* Sprague & Craib) was determined by bachelor Tran Thai Vinh - Central Highlands Institute of Scientific Research. Template No. N17/01 is kept at the Faculty of Chemical Technology, Hanoi University of Industry.

2.3. Extraction, isolation and purification of compounds

The leaves and stems of *Triumfetta psedocana* (4.5 kg) were dried, ground and then extracted in a mixture of EtOH / water (90:10), at room temperature. After distillation of ethanol solvent under reduced pressure, the aqueous solution was extracted with a liquid–liquid distribution with *n*-hexane, chloroform and *n*-buthanol, respectively. The solvents were distilled under reduced pressure to obtain the respective extracts of *n*-hexane M1H (19 g); chloroform M1C (60 g) and *n*-BuOH M1B (85 g).

M1C chloroform extract (60 g) was separated on silica gel column with Dichloromethane / Methanol gradient elution system (100:0→50:50) to obtain 7 major fractions (M1C1 ÷ M1C7). The M1C4 fraction was further separated on a silica gel column with the solvent system Dichloromethane - methanol (10:1) to obtain 3 fractions (M1C4.1 ÷ M1C4.3). The M1C4.3 fraction was separated into two small fractions M1C4.3.1 and M1C4.3.2 on a silica gel column, eluted with ethyl acetate-acetone (9:1) solvent. The fraction M1C4.3.1 was cleaned by sephadex column chromatography with the methanol mobile phase to yield 50 mg of substance **1** as an amorphous, pale yellow solid.

The *n*-hexane extract M1H (19 g) was separated through a silica gel column eluted with a gradient solvent system *n*-hexane - Ethyl acetate (100:0→50:50) to obtain 13 fractions (M1H1 ÷ M1H13). At segment M1H9 (1.5 g), an ivory white solid appeared, filtered and washed with n-hexane solvent and further separated by Sephadex column with MeOH solvent to obtain compound **2** (15 mg) and **3** (34 mg).

The *n*-BuOH extract (85 g) was separated on a Dianion column (d = 60 mm) and eluted with solvent systems 100% H_2O, MeOH: H_2O (9: 1, 8: 2, 1: 1) and 100% MeOH obtained 8 segments (M1 ÷ M8). The M4 fraction (7 g) was further separated by a Sephadex column, eluted with

methanol to obtain 4 fractions (M4.1 ÷ M4.4). The M4.1 fraction (200 mg) was separated by silica gel column (CH_2Cl_2-MeOH-H_2O, ratio 3: 1:0.1) to obtain 3 fractions (M4.1.1 ÷ M4.1.3). The M.4.1.3 fraction was further separated by Rp-18 column (MeOH - H_2O, ratio 4:1) to obtain substance **4** (12 mg).

Tiliroside (**1**): Amorphous solid, pale yellow; molecular formula $C_{30}H_{26}O_{13}$; ESI-MS (*m/z*): 595,1 $[M+H]^+$; ^{1}H-NMR (CD_3OD, 500 MHz): ^{13}C-NMR (CD_3OD, 125 MHz) see Table 1.

Friedelin (**2**): White solid; molecular formula $C_{30}H_{54}O$; ESI-MS (*m/z*): 427,3 $[M+H]^+$; ^{1}H-NMR ($CDCl_3$, 500 MHz); ^{13}C-NMR ($CDCl_3$, 125 MHz), see Table 2.

3β-Hydroxyfriedelane (**3**): White solid; molecular formula $C_{30}H_{52}O$; ESI-MS (*m/z*): 429,3 $[M+H]^+$; ^{1}H-NMR ($CDCl_3$, 500 MHz); ^{13}C-NMR ($CDCl_3$, 125 MHz), see Table 2.

Triumboidin (**4**): Amorphous solid, pale yellow; molecular formula $C_{26}H_{28}O_{14}$; ESI-MS (*m/z*): 565,1 $[M+H]^+$; ^{1}H-NMR (500 MHz, DMSO-d_6); ^{13}C-NMR (125 MHz, CD_3OD) see Table 3

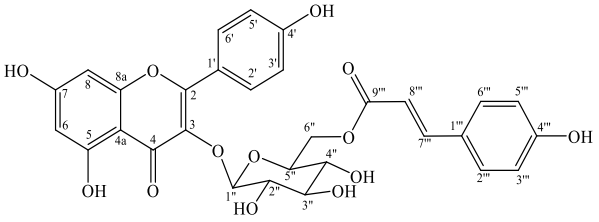
3. Results and discussion

The ^{1}H-NMR spectrum of substance **1** observed a characteristic *doublet* resonance signal of 2 aromatic protons at the meta position at δ_H 6.13 and δ_H 6.29 (J = 2.0 Hz) respectively H-6 and H. -8; *doublet* pair at δ_H 7.98 (J = 9.0 Hz) and δ_H 6.82 (J = 8.5 Hz) with H-2' / H-6' and H-3' / H-5 respectively ' corresponds to an AA', BB' system of the aromatic ring. The above spectral data suggest the presence of a flavonoid ring system. The ^{1}H-NMR spectrum continued to observe the presence of type A, A', B, B' aromatic proton signal at δ_H 6.79 (2H, *d*, J = 8.5 Hz, H-3''' / H-5''') and 7.29 (2H, *d*, J = 9.0 Hz, H-2'''/H-6''') and a trans-type olefinic 2-proton signal at δ_H 6.08 (*d*, J = 16.0 Hz, H-8'''); δ_H 7.41 (*d*, J = 16.0Hz, H-7'''); furthermore, the ^{13}C-NMR spectrum shows 3 signals of carbon at the displacement δ_C 116.7 (C-3''', C -5'''); 127.1 (C-1'''); 131.1 (C-2''', C-6'''); 161,4 (C-4'''), all data suggest the presence of a *p*-coumaroyl group. The presence of a sugar radical is shown by absorption at δ_H 3.52 (4H, m, H2", H3", H4", H5") and two protonated methylenes at δ_H 4,33 and 4,21 (H2-6"). The *doublet* signal at δ_H 5.25 (J = 7.5 Hz) characterizes the anomeric proton H-1". The diaxial interaction constant (J = 7.5 Hz) between H-1'' and H-2'' indicates that the sugar configuration is *β*-glucose [6]. The ^{13}C-NMR spectrum shows 30 carbon signals including 2 carbonyl groups at δ_C 179.3 (C-4) and δ_C 168.8 (C-9''''), 5C methyl group, 1 methylene group, 12 methine groups and 10 C order 4. The positive ion ESI-MS mass spectrum has a pseudomolecular ion peak at *m / z* 595.1$[M+H]^+$. The data of mass spectroscopy and NMR spectroscopy allow the conclusion that the CTPT of **1** is $C_{30}H_{26}O_{13}$. The binding sites of the groups were determined on the HMBC spectrum. The results show that the signals interact between H-1" (δ_H 5.25) and C-3 (δ_C 135.2); between H-6" (δ_H 4.21 / 4.33) and C-9''' (δ_C 168.8). This shows that the *β*-D-glucose sugar group binds to the kaempferol group at the C-3 position and to the coumaroyl group at the C6 position." From all the 1D-NMR and 2D-NMR spectral data, the combined comparison of ^{1}H- and ^{13}C-NMR spectral data of substance **1** with published spectral data [7] (Table 1) can confirm that substance **1** is Tiliroside (Kaempferol-3-O-β-D-(6''-O-E-4-coumaroyl)-glucopyranoside). Tiliroside is a substance that exhibits weak anti-inflammatory activity. In a study on the pharmacokinetics of an ethnic medicine used in Africa, South America and Hawaii called Waltheria Indica L. Tiliroside was investigated for its inhibitory activity on the important inflammatory enzyme COX-2 by using the COX-2 fluoro-metric assay. The resulting molecular tiliroside showed a COX-2 inhibition of 10.4% starting at a concentration of 15 μM and increasing with dose to 51.2% at 150 μM [8].

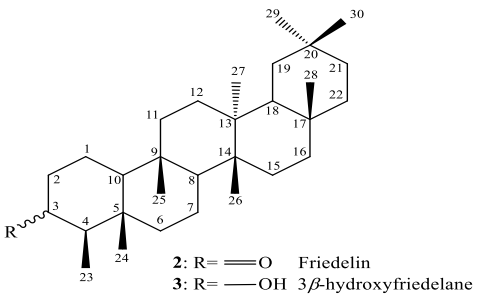
The substance **2** gives resonance signals on ^{1}H NMR spectrum including 7 tertiary methyl groups at δ_H (*ppm*): 0.73; 0.89; 0.95; 1.00; 1.01; 1.05; 1.22 as singlets and a *doublet* signal of the secondary methyl group at δ_H 0.87 (J = 7.0 Hz), along with numerous methine and methylene groups in the δ_H 1.26–2.38 region. In general, the ^{1}H-NMR spectrum has the spectrum of a triterpene compound. The ^{13}C-NMR spectrum of substance **2** observed a signal of 30 carbons including 6 quaternary carbons at δ_C (*ppm*): 28.2 (C-20), 30.0 (C-17), 38.3 (C-14), 39.7 (C-13), 37.5 (C-9), 42.2 (C-5); 4 carbon methine at δ_C 42.9 (C-18), 53.1 (C-8), 58.3 (C-4), 59.5 (C-10); 11 methylene carbons at δ_C 18.3 (C-7), 22.3 (C-1), 30.5 (C-12), 32.5 (C-15), 32.8 (C-21), 35.4 (C-19), 35.7 (C-11), 36.1 (C-16), 39.3 (C-22), 41.3 (C-6), 41.6 (C -2); 8 methyl carbon at δ_C 6.8 (C-23), 14.7 (C24); 18.0 (C-25); 18.7 (C-27); 20.3 (C-26); 31.8 (C-30); 32.1 (C-28); 35.0 (C-29). Occurrence of carbonyl group signal at δ_C 213.2 (C-3); DEPT and HSQC spectra observed a signal of a secondary methyl group at δ_H 0.87 (*d*, J = 7.0 Hz) and δ_C 6.8 (C-23) suggesting the presence of the associated methyl group bonded to the C-4 carbon of the friedelan framework. In addition, positive ion ESI-MS mass spectrometry gives a pseudomolecular ion peak at *m/z* 427.3 $[M+H]^+$. The data of mass spectrometry and NMR spectroscopy allow the conclusion that the CTPT of **2** is $C_{30}H_{54}O$. Comparing ^{1}H- and ^{13}C-NMR spectral data of substance **2** with friedelin compounds [9] found a similarity in each respective position. Thus, compound *2* is confirmed to be friedelin (friedelan-3-one). In a preliminary screening study for anti-inflammatory activity, friedelin was one of the compounds isolated from the stem and leaves of Acer mandshuricum. Friendelin exhibited moderate activity against four human cancer cell lines (HL-60, SK-OV-3, A549 and HT-29) with GI_{50} values of 11.1-13.5 μM. Furthermore, the compound's anti-inflammatory effect at non-cytotoxic concentrations (1–100 nM) was evaluated for its inhibitory activity on TNF-α secretion in cell line-stimulated macrophages. RAW264.7 friedelin lipopolysaccharide (LPS) cells exhibited moderate activity [10].

The ^{1}H- and ^{13}C-NMR spectra of compound **3** are similar to those of compound **2**, with signals of 7 tertiary methyl groups at δ_H 0.86 – 1.18 *ppm* as singlets and *doublet* of secondary methyl group at δ_H 0, 94 (*d*, J = 7.5). Another difference is that in the ^{1}H-NMR spectrum of substance **3**

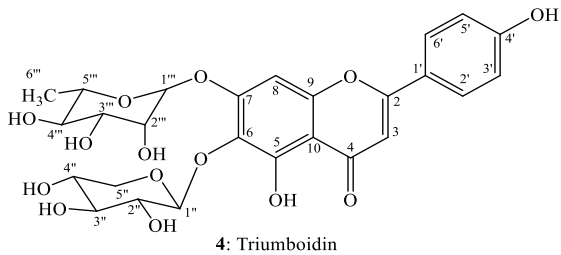
there is an additional signal at δ_H 3.77 (m, H-3a) and in the ^{13}C-NMR spectrum the signal of the ketone group is replaced by an oxymethine group (δ_C 72.8). The ^{13}C-NMR and HSQC spectra showed signals of 30 carbon atoms, including 6 quaternary carbons; 5 groups of methine; 11 methylene groups and 8 methyl groups. Positive ion ESI-MS mass spectrometry gives pseudomolecular ion peak at *m / z* 429.3 $[M+H]^+$. The data of mass spectrometry and NMR spectroscopy allow the conclusion that the CTPT of 3 is $C_{30}H_{52}O$. In particular, on the ^{13}C-NMR and HSQC spectra, a signal at δ_H 3.77 (*m*, H-3a) / δ_C 72.8 of the oxymethin group and a secondary methyl group at δ_H 0.94 (*d, J* = 7.5 Hz) / δ_C 11.63 (C-23) suggests a methyl group bound to the C-4 of the friedelan framework. From the above data, combined with the ^{1}H- and ^{13}C-NMR spectra of the published friedelan-3-ol [11], it can be confirmed. Compound **3** is friedelan-3-ol. A study on the anti-inflammatory activity of Tetrastigma sulcatum extract, fractions, purified compounds and derivatives using in vitro and in vivo bioassay techniques was performed. Friedelan-3β-ol was isolated from the leaf extract. LPS-induced inflammatory RAW 264.7 macrophages were used as in vitro models to study anti-inflammatory and antioxidant effects. As a result, the compound Friedelan-3β-ol and its derivatives showed significant inhibition of inflammatory cytokines with ($P < 0.001$) and NO production, a dose-dependent effect. An in vivo study in a carrageenan-induced rat model of leg edema demonstrated a reduction in leg edema and dose-dependent anti-inflammatory cytokines with treatment with Friedelan-3β-ol compound and its derivatives [12].



1: Tiliroside



2: R= ═O Friedelin
3: R= —OH 3β-hydroxyfriedelane



4: Triumboidin

Figure 1. *Structure of substances **1-4** isolated from Triumfetta psedocana (Sparague & Craib)*

Table 1. *^{1}H- and ^{13}C-NMR of compound **1** and Tiliroside [7]*

Position	**Compound 1**		Tiliroside [7]	
	δ_H[a] (*ppm*)	δ_C[b] (*ppm*)	δ_H[#] (*ppm*)	δ_C[*] (*ppm*)
2		158.3	-	156.3
3		135.2	-	132.9
4		179.3	-	177.3
4a		105.6	-	103.7
5		161.1	-	161.0
6	6.13 (*d, J* = 2.0)	99.9	6.13 (*d, J* = 2.0)	98.6
7	-	165.8	-	164.1
8	6.29 (*d, J* = 2.0)	94.8	6.36 (*d, J* = 2.0)	93.6
8a	-	159.3	-	156.2
1’	-	122.7	-	120.6
2’	7.98 (*d, J* = 9.0)	132.2	7.97 (*d, J* = 8.8)	130.7
3’	6.82 (*d, J* = 8.5)	116.0	6.84 (*d, J* = 8.8)	115.0
4’		162.8	-	159.9
5’	6.82 (*d, J* = 8.5)	116.0	6.84 (*d, J* = 8.8)	115.0
6’	7.98 (*d, J* = 9.0)	132.2	7.97 (*d, J* = 8.8)	130.7
1”	5.25 (*d, J* = 7.5)	104.0	5.44 (*d, J* = 7.0)	100.8
2”	3.52 *m*	75.7	-	74.0
3”	3.52 *m*	78.0	-	76.1
4”	3.52 *m*	71.7	-	69.8
5”	3.52 *m*	75.7	-	74.1
6”	4.33 (*dd, J* = 2.0; 11.5)	64.4	4.30 (*m*)	62.9
1”’	-	127.1	-	124.8
2”’	7.29 (*d, J* = 9.0, 2H)	131.1	7.34 (*d, J* = 8.8)	130.0
3”’	6.79 (*d, J* = 8.5, 2H)	116.7	6.77 (*d, J* = 8.8)	115.6
4”’	-	161.4	-	159.7
5”’	6.79 (*d, J* = 8.5, 2H)	116.7	6.77 (*d, J* = 8.8)	115.6
6”’	7.29 (*d, J* = 9.0, 2H)	131.1	7.34 (*d, J* = 8.8)	130.0
7”’	7.41 (*d, J* = 16.0, 1H)	146.5	7.33 (*d, J* = 15.5)	144.5
8”’	6.08 (*d, J* = 16.0)	114.7	6.09 (*d, J* = 15.5)	113.5
9”’	-	168.8	-	166.1

[a]CD$_3$OD, 500 MHz; [b]CD$_3$OD, 125MHz;

[#]DMSO-d$_6$, 270MHz; [*]DMSO-d$_6$, 67.5MHz

The ^{13}C-NMR spectrum of **4** shows the signal of 26 carbon atoms, including carbon atoms of monosaccharides in the range of δ_C 60-80 *ppm*. This is confirmed on the ^{1}H-NMR spectrum, the presence of proton resonance signals with displacement at δ_H 4.96 and 5.51 *ppm*, corresponding to 2 proton anomers; together with the signals in the region from δ_H 3.0 - 4.0 *ppm*, confirmed that **4** contains 2 monosaccharide sugar units. The signal at δ_H 1.17 (*d, J* = 6 Hz) suggests a rhamnose sugar unit (Rha). In addition to the signal of 1 methylene group, there was also a signal of 7 methine groups. Thus, after excluding the rhamnosyl group, only 3 signals of the methine group remained in the spectral region from δ_C 80-70 ppm, combined with analysis of the DEPT-HSQC spectrum in the range from δ_C 80-70 *ppm*, suggesting monosaccharides. The rest is the xylosyl sugar. The ^{1}H-NMR spectrum, there are also signals of protons on unsaturated carbon, in which doublet signals are at position δ_H 7.96 (*d, J* = 9.0) and 6.93 (*d, J* = 9.0 Hz)

characterizes the aromatic ring at the para position. Combining the HSQC and HMBC spectral data determined the respective positions of the protons and carbons of the 1,4-substituent ring. The HMBC spectrum, singlet signal at δ_H 6.83(*s*) strongly interacts with aromatic ring carbon signals (C-1'; δ_C 121.1), and with carbonyl group signals (δ_C 182.3) as well as with the carbon signals at δ_C 105.7 and 164.4. This proves that this proton is the H-3 of a flavone compound. On the other hand, the ESI-MS mass spectrometry positive ion gives pseudomolecular ion peak at *m / z* 565.1 $[M+H]^+$. The data of mass spectrometry and NMR spectroscopy allow the conclusion that the CTPT of **4** is $C_{26}H_{28}O_{14}$. Thus, it can be confirmed that **4** is a flavone glycoside compound. From the HMBC spectral data, it is observed that the proton anomer of the xylosyl group H-1" (δ_H 4.96) has a distant interaction with the carbon atom signal at δ_C128.6 *ppm* (C-6), indicating that the xylosyl group has bond O-xyloside to C-6. Similarly on the HMBC spectrum, the rhamnosyl H-1"' (δ_H 5.51) proton signal has an interaction with the C-7 carbon (δ_C155,3), indicating that the rhamnosyl group has an O-rhahmnoside bond with the flavone at C-7. From the analysis of the above spectral data, and comparison with the published spectral data [13], it can be confirmed that **4** is Triumboidin (scutellarein 6-xyloside-7-rhamnoside). The biological activity of this substance has not yet been announced.

Table 2. *^{1}H- and ^{13}C-NMR of compound **2** and **3***

Posi-tion	Chất **2**		Chất **3**	
	δ_H^{ab} (*ppm*)	δ_C^{ac} (*ppm*)	δ_H^{ab}(*ppm*)	δ_C^{ac}(*ppm*)
1	1.96 (*m*, H-a) 1.67 (*m*, H-b)	22.3	1.58 (*m*, H-a) 1.45 (*m*, H-b)	15.8
2	2.38 (*m*, H-a) 2.29 (*m*, H-b)	41.6	1.89 (*m*, H-a) 1.54 (*m*, H-b)	36.1
3	-	213.2	3.77 (*m*, H-3a)	72.8
4	2.25 (1H, *br*)	58.3	1.25 (over, H-4a)	49.2
5	-	42.2	-	37.9
6	1.70 (*m*, H-a) 1.22 (*m*, H-b)	41.3	1.77(*m*, H)	41.8
7	1.41 (*m*, H-a) 1.3 (*m*, H-b)	18.3	1.34 (*m*, H)	17.7
8	-	53.1	-	53.2
9	-	37.5	-	37.1
10	-	59.5	-	61.4
11	-	35.7	-	35.4
12	-	30.5	-	30.7
13	-	39.7	-	38.4
14	-	38.3	-	39.7
15	-	32.5	-	32.4
16	-	36.1	-	35.6
17	-	30.0	-	30.1
18	-	42.9	-	42.9
19	-	35.4	-	35.2
20	-	28.2	-	28.2
21	-	32.8	-	32.9
22	-	39.3	-	39.3
23	0.87 (3H, *d*, *J* = 7.0)	6.8	0.94 (3H, *d*, *J* = 7.5)	11.6
24	0.73 (3H, *s*)	14.7	0.97 (3H, *s*)	16.4
25	0.89 (3H, *s*)	18.0	0.86 (3H, *s*)	18.3
26	1.01 (3H, *s*)	20.3	0.99 (3H, s)	20.1
27	1.05 (3H, *s*)	18.7	1.01 (3H, *s*)	18.6
28	1.22 (3H, *s*)	32.1	1.18 (3H, *s*)	32.1
29	0.95 (3H, *s*)	35.0	0.95 (3H, *s*)	35.0
30	1.00 (3H, *s*)	31.8	1.00 (3H, *s*)	31.8

[a]CDCl$_3$; [b]500 MHz; [c]125 MHz;

Table 3. *^{1}H- and ^{13}C-NMR of compound **4** and Triumboidin [13]*

Posi-tion	Chất **4**		Triumboidin [13]	
	δ_H^a (*ppm*)	δ_C^b (*ppm*)	$\delta_H^{\#}$ (*ppm*)	δ_C (*ppm*)
2	-	164.4		164.3
3	6.83 (*s*)	102.8	6.85 (*s*)	103.0
4	-	182.3	-	182.2
5	-	152.4	-	155.3
6	-	128.6	-	128.6
7	-	155.3	-	152.7
8	6.98 (*s*)	94.4	7.03 (*s*)	94.3
9	-	152.4	-	152.3
10	-	105.6	-	105.6
1'	-	121.1	-	121.0
2'	7.96 (*d*; *J* = 9.0)	128.6	7.97 (*d*)	128.6
3'	6.93 (*d*; *J* = 9.0)	116.0	6.97 (*d*)	116.0
4'	-	161.4	-	161.4
5'	6.93 (*d*; *J* = 9.0)	116.0	6.97 (*d*)	116.0
6'	7.96 (*d*; *J* = 9.0)	128.6	7.97 (*d*)	128.6
1"	4.96 (*d*; *J* = 7.0)	103.0	-	102.7
2"	3.30 (overlap)	71.7	-	73.4
3"	3.25 (*m*)	75.3	-	75.4
4"	3.90 (overlap)	69.5	-	69.5
5"	3.82 (*m*) 3.05 (*t*)	65.7	–	65.7
1"'	5.51 (*s*)	99.5	5.58 (*s* broad)	99.4
2"'	3.91 (*s*)	69.5	3.93 (*m*)	69.8
3"'	3.76 (*d*; *J* = 6,5)	70.2	3.81 (*m*)	70.2
4"'	3.32 (overlap)	73.3	3.35(overlap)	71.8
5"'	3.53 (*m*)	70.2	3.50 (overlap)	70.2
6"'	1.17 (*d*; *J* = 6.0)	18.0	1.19 (*d*)	18.0

[a] DMSO-d$_6$, 500 MHz; [b]CD$_3$OD, 125MHz

[#]DMSO-d$_6$, 350 MHz

4. Conclusion

Four compounds including tiliroside (**1**), friedelan-3-one (**2**), 3β-hydroxyfriedelane (**3**) and triumboidin (**4**) were isolated and chemically identified from the leaves and stems of *Triumfetta psedocana* (Sparague & Craib), collected in Dalat, Lamdong province, Vietnam, in May 2017. This is the first time the process of isolating and determining the structure of substances has been published from this species

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